ρ is the density of the cooling fluid lb_m/ft^3

c_p is the isobaric specific heat of the cooling fluid, $Btu/lb_m{}^oF$

u_m is the mean velocity of the cooling fluid, ft/s.

IN THE CLAIMS:

Please cancel claims 8-20 without prejudice.

Please replace claims 1-7 with the following:

1. (Amended) A heat sink for electrical or electronic components comprising:

a heat spreader plate to which the components to be cooled are connected;

at least two heat conducting fins that are positioned substantially parallel to one another and which are connected substantially perpendicular to said heat spreader plate; and

at least one foam block that is disposed in the space between parallel fins wherein said block is formed of reticulated foam to define a highly porous, heat conducting, open-celled structure that permits a cooling fluid to flow through said block as the cooling fluid passes across said fins.

2. (Amended) A heat sink of claim 22 wherein said fins and said foam blocks are connected to one surface of said heat spreader plate.

3. (Amended) A heat sink of claim 1 wherein the fin height, **b**, is determined by the relationship,

$$\boldsymbol{b} = 0.6498\sqrt{\frac{k_f \delta_f}{h}}$$

where,

k_f is the thermal conductivity of the selected fin material, $Btu/ft\ s\ {}^oF$

δ_f is the fin thickness, ft

h is the convective heat transfer coefficient for the foam-filled space bounded by said fins and said heat spreader plate, Btu/ft^2 s ^oF, and where h is given by the formula,

$$h = 1.2704\left[\frac{n^{0.50}}{(1-\phi)^{0.25}}\right]\left(\frac{\rho^{0.50}k^{0.63}c_p^{0.37}}{\mu^{0.13}}\right)u_m^{0.50}$$

where,

n is the linear density of said at least one foam block, pores per ft

ϕ is the porosity of said at least one foam block, expressed as a fraction

ρ is the density of the cooling fluid that passes across said fins, lb_m/ft^3

k is the thermal conductivity of the cooling fluid, Btu/ft s ^oF

c_p is the isobaric specific heat of the cooling fluid, Btu/lb_m ^oF

μ is the dynamic viscosity of the cooling fluid, lb_m/ft s

u_m is the mean velocity of the cooling fluid, ft/s

4. (Amended) A heat sink of claim 1 wherein the fin spacing, **a**, is determined by the relationship,

$$a = \Phi\delta$$

where,

Φ is between 1 to 6

δ, ft, is determined by the relation,

$$\delta = 7.32\sqrt{\frac{kc}{\rho c_p u_m}}$$

where,

c is the selected fin length in the flow direction, ft

k is the thermal conductivity of the cooling fluid that passes across said fins, Btu/ft s ^{o}F

ρ is the density of the cooling fluid lb_m/ft^3

c_p is the isobaric specific heat of the cooling fluid, $Btu/lb_m{}^{o}F$

u_m is the mean velocity of the cooling fluid, ft/s.

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5. (Amended) A heat sink of claim 1 wherein said heat spreader plate, said fins and said at least one foam block are made from the same or different thermal conducting materials.

6. (Amended) A heat sink of claim 1 wherein said heat spreader plate, said fins and said at least one foam block are made from aluminum, copper, graphite or aluminum-nitride ceramic.

7. (Amended) A heat sink of claim 1 wherein said heat spreader plate, said fins and said at least one foam block are made from aluminum.

Please add the following new claims:

21. (New) A heat sink of claim 1 wherein said fins and said at least one foam block are connected to one surface of said heat spreader plate.

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22. (New) A heat sink of claim 1 wherein said at least one foam block is further defined as a plurality of foam blocks.

23. (New) A heat sink of claim 22 wherein said fins are connected to said heat spreader plate through thermal bonding.

24. (New) A heat sink of claim 22 wherein said fins are connected to said foam blocks through thermal bonding.

25. (New) A heat sink of claim 23 wherein said fins are connected to said foam blocks through thermal bonding.

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26. (New) A heat sink of claim 1 wherein said fins are connected to said heat spreader plate through thermal bonding.

27. (New) A heat sink of claim 1 wherein said fins are connected to said at least one foam block through thermal bonding.

28. (New) A heat sink of claim 26 wherein said fins are connected to said at least one foam block through thermal bonding.

REMARKS

Applicant herein reaffirms the provisional election made on May 13, 2002. Specifically, Applicant elects Group I, directed to the heat sink of claims 1-7. In making this election, Applicant also cancels, without prejudice, claims 8-20 which were previously withdrawn from further consideration by the Examiner.

After entry of the subject amendment, claims 1-7 and 21-28 remain pending in the subject application. More specifically, claims 8-20 have been cancelled from the application, claims 1-7 have been amended as described below, and claims 21-28 have been added to the application. There is full support in the specification as originally filed for the amendments to the claims and for the added claims. Accordingly, no new matter has been introduced.